

NSAI

I.S. 36 : PART 2 : 1987

IRISH STANDARD

**BITUMEN ROOFING FELTS
PART 2, POLYESTER BASED FELTS**

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FOREWORD

This specification is a revision of I.S. 36 : 1972 and it is now being published in two parts:

- Part 1 (published 1986) 'Fibre and Glass Fibre based Felts'. These felts were covered by I.S. 36 : 1972.
- Part 2: (this part) 'Polyester based Felts'. These were not covered by I.S. 36 : 1972.

The principle of specifying the minimum mass of base materials and bitumen content is retained in this revision. Some performance tests are included in this part. The figures given for the minimum mass of base make allowance for the loss in mass which occurs, because of evaporation of natural oils and moisture from the base materials, due to the heating which takes place in the course of the analysis described in Appendix A. The present revision includes modified requirements for surfacing material.

The following table summarises the types of roofing felt in the previous edition of I.S. 36 that are discontinued and the types of roofing felt that are now covered in Parts 1 and 2. Part 1 provides two extra types of 1B felt in place of the discontinued 1C felts. The type B felts are renamed fine granule surfaced bitumen felts. The polyester felts covered in this part are also included in the table.

	Fibre base	Asbestos base	Glass fibre base	Polyester Base
Discontinued				
Saturated bitumen felt	1A	2A	--	--
Fine granule surfaced felts	--	2B	--	--
Self-finished felt	1C	2C	--	--
Coarse sand surfaced felt	1D	--	--	--
Mineral surfaced felt	--	2E	--	--
Grades included in this revision				
Fine granule surfaced felt	1B	--	3B	5B
Fine granule surfaced felt	--	--	--	5U
Mineral surfaced felt	1E	--	3E	5E
Reinforced felt	1F	--	--	--
Venting base layer	--	--	3G	--

The specification aims at securing the marketing of roofing felts in a standardised manner. For the purpose of distinguishing between the various types classified in this specification, the following brief outline of the component materials, the manufacturing procedure and uses is given.

A roofing felt consists essentially of a sheet of matted fibres rendered partially or completely impervious to water by treatment with bituminous materials. According to the purpose and type of roofing felt required, the fibres may be derived from the various sources, viz., vegetable (e.g. cotton, jute, flax, wood pulp), animal (e.g. hair, wool,) or mineral (e.g. glass), synthetic fibre (e.g. polyester), or may be mixtures of those fibres. The unproofed sheets are made in various thicknesses or masses, textures and mechanical strengths, depending partly upon the physical nature of the fibre. While some are close-textured and tough, others are of open texture and low strength, although treatment with the proofing material always increases the mechanical strength. The types of proofing materials blended to give the required properties, are bitumens derived from petroleum.

With the Class 1 felts, the untreated base is first passed through a tank containing the saturating material which is maintained in a hot fluid condition, the surplus being removed from the saturated felt during passage between rollers. It is then coated, as a continuous process, with more highly weather resisting material. In the case of Class 3 material, the untreated glass fibre base is passed through the coating process only.

The surface of the coated fibre and glass fibre felts so produced is then covered with surfacing material, appropriate to the type of felt, which prevents sticking in the roll and, in some cases, provides a decorative and protective finish.

Class 5 polyester base felts have improved performance capability which is derived from the enhancement of the reinforcing properties and greater mechanical strength involved in the make-up of polyester base. The final performance of the bitumen polyester felt is related to the mass/area ratio of the membrane, the composition of the base (polyester fibre/binder content) and the method of production.

The particular technical benefits conferred by bitumen polyester roofings are:

- (i) an improvement in the capability of the built-up roof covering to accommodate deformations;
- (ii) an increase in the puncture and general mechanical damage resistances of the covering;
- (iii) a higher nail holding or nail anchorage capability by virtue of the increased tear resistance of the polyester reinforcement.

These felts are made from a base consisting of polyester fibres which are needled and chemically bonded (method 1) or alternatively spun bonded (method 2) to form a strong reinforcing carrier for the bituminous roofing.

Method 1: Needling system. Separate staple fibres are formed into a loose "batt" which is compounded by progress through a number of separate in-line needling stations to give a high degree of fibre entanglement so as to provide good inherent mechanical properties, prior to arrival at the next in-line process of binder impregnation, and heat stabilization.

Method 2: Spun bonded system. Continuous filament polyester fibres, spun at the start of the in-line process, are randomly overlaid in sufficient mass to give the required end-weight and thickness. The loose mat thus produced may be lightly needled and as a continuous process, impregnated with a binder and subjected to heat stabilization.

Two distinct types of felt are covered in Class 5. The main strength and performance requirements of the top layer are provided by the use of a 3.5 kg/10m² polyester base, the properties of which are fully detailed in the standard. Also covered is a special light weight underlayer of improved strength achieved by the use of a 1.25 kg/10m² base.

In the manufacturing process the 3.5 kg/10m² base is first passed through a tank containing bitumen which is maintained in a hot fluid condition, the surplus being removed from the treated felt during passage between rollers. Treatment of the 1.25 kg/10m² base is optional. The base is then coated, as a continuous process, with a weather resisting coating material.

The surface of the coated polyester felts so produced is then covered with surfacing material, appropriate to the type of felt, which prevents sticking in the roll and, in some cases, provides a decorative and protective finish.

In describing the various types of roofing felt, reference is made to the mass per 10m², usually referred to as the 'nominal mass'. Terms such as 'ply', 'heavy', etc., sometimes used are inadequate and misleading. Roofing felts should be identified by the class and type as indicated in the Tables of the standard specification.

The various felts should be selected on the basis of their own specific properties and the purpose which they are to fulfil. In particular the fire protection requirements of the completed roof should receive careful consideration. The decision as to whether the felt chosen should be self-finished or surfaced with fine granules or coarse granules is one which can be decided at the time of laying. The felts should be specified in terms of the nominal masses.

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